



WEAR AND IMPACT SOLUTIONS



**MAXIMIZE RESISTANCE TO
IMPACT, WEAR, DEFORMATION
AND FRACTURE**



H.B. Carbide

hbcarbide.com

OPTIMIZED SOLUTIONS FOR YOUR MOST CHALLENGING APPLICATIONS

The need for maximum resistance to impact, wear, deformation and fracture is crucial to achieve success in many industries and production processes. H.B. Carbide is committed to improving productivity by providing effective carbide blank solutions that address component deterioration and failure issues in wear and impact application areas.

As a fully-integrated manufacturer, we have the ability to manage the complete part cycle from powder to ground blank. This allows us to ensure optimum grade selection, part-to-part reliability, and the flexibility needed to achieve unique geometric designs.

CAPABILITIES EXAMPLES INCLUDE, BUT ARE NOT LIMITED TO:

- Forming Dies
- Compacting Dies
- Stamping Dies
- Punches and Ejector Pins
- Nozzles
- Drawing Dies
- Rolls
- Slitter Knives
- EDM Blanks



INCREASING PRODUCTIVITY THROUGH CARBIDE BLANKS & PREFORMS

H.B. Carbide, Lewiston, Mich., a global leader in the blank tooling industry, was established in 1983 with the mission to deliver a superior customer experience with industry-leading custom and altered standard carbide blanks that provide consistency, reliability and advanced capabilities for your most demanding applications.

H.B. Carbide is a fully integrated manufacturer, starting from powder production through finished ground blank. We offer a comprehensive selection of grades to deliver high-performance, reliable near-net shaped blanks that address specialized customer application challenges across diverse industries.

- Consistent quality and reliable service for 40 years
- USA-manufactured products from raw material to finished ground blank
- Professional, knowledgeable, and experienced specialists prepared and committed to support and assist you in your decision-making process to achieve optimized solutions, from grade selection to preform blank design

CUSTOM WEAR AND IMPACT BLANK SOLUTIONS



ENERGY

- Power Generation
- Oil & Gas
- Nuclear
- Solar
- Wind Turbine



TRANSPORTATION

- Aerospace
- Automotive
- Construction
- E-Mobility



DEFENSE

- Ammunition



QUALITY. CONSISTENCY. RELIABILITY.

ADVANCED NEAR NET SHAPE PREFORM SOLUTIONS.

THE HB ADVANTAGE

When you work with HB Carbide, you can count on:



24-hour (or less) quote turnaround



Personalized attention to your orders



High-performance blanks with minimal grind stock



Blanket order options



Aggressive lead times



Efficient, courteous service personnel



Technical support with grade and preform design



Dedication to continuous quality improvements

IMPACT

H.B. Carbide manufactures customized metal forming blanks with premium carbide grades to ensure superior tool performance where repeatability, accuracy and consistency are crucial to maximize production efficiencies.



HB Grade Code	Clamping Dies	Cutting Knives	Punches			Forming Dies	Compacting Dies	Stamping Dies	Ejector Pins	High Impact Forming Applications	Fastener Forming Dies	Light Stamping Carbide Dies & Nibs Deep Draw	Ammunition Dies
			High Toughness	Medium Toughness Medium Wear Resistance	High Wear Resistance								
HB-115		○		○	○				○				
HB-2					○				○				
HB-312	○	○		○		○						○	○
HB-315	○	○	○			○	○	○			○	○	○
HB-320	○		○			○	○	○		○	○	○	○
HB-325			○				○	○		○	○		
HB-411				○									

○ RECOMMENDED

○ ALTERNATIVE (BASED ON SPECIFIC APPLICATION)

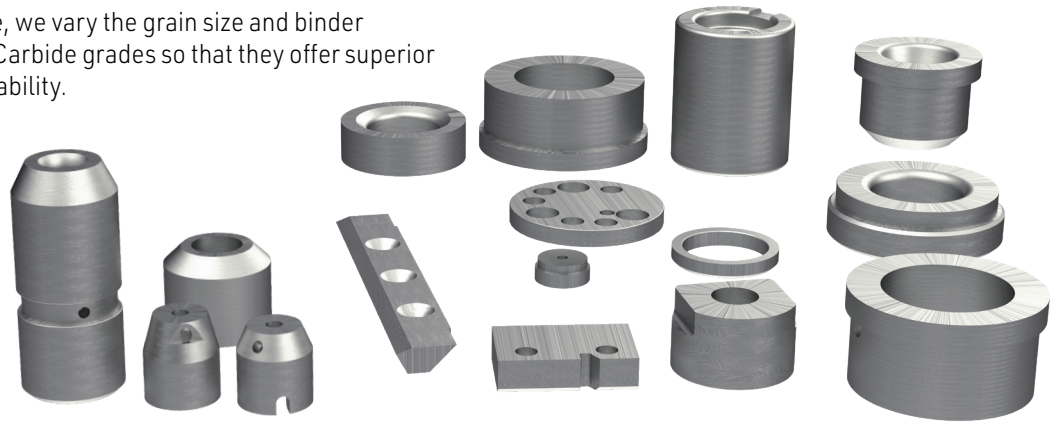
WEAR

The unique features of cemented carbides include high hardness, wear resistance and corrosion protection.

H.B. Carbide's comprehensive portfolio includes grades of consistent quality that can be matched to your wear needs to ensure tool performance reliability.

Through extensive material science expertise, we vary the grain size and binder composition properties to optimize our H.B. Carbide grades so that they offer superior protection against wear, impact, and edge stability.

Additionally, our flexible manufacturing process allows customized blank configurations that meet the needs of customers with unique blank geometries and batch size requirements.



HB Grade Code	Nozzles	Drawing Dies	Rolls	Thread Rolling	EDM Blanks	Drawing Tools - Ferrous Metals large Ø → small Ø			Drawing Tools - Non-Ferrous Metals large Ø → small Ø		
						High Toughness	Medium Toughness Medium Wear Resistance	High Wear Resistance	High Toughness	Medium Toughness Medium Wear Resistance	High Wear Resistance
HB-3	○					○		○	○		
HB-110	○						○			○	○
HB-115		○					○			○	○
HB-2	○					○		○	○		
HB-312		○	○	○	○						
HB-315		○	○	○	○						
HB-320		○	○	○	○						
HB-325		○			○						
HB-411								○			○

○ RECOMMENDED

○ ALTERNATIVE (BASED ON SPECIFIC APPLICATION)

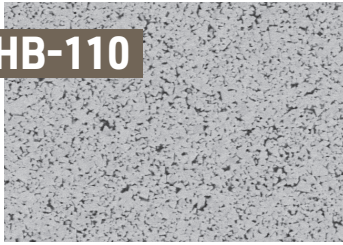
WEAR AND IMPACT GRADE PROPERTY OVERVIEW

Submicron

Coarse

Bimodal

HB-110

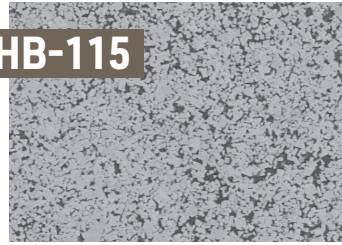


Co	10%
WC	90%
Density	14.5 g/cm ³
Hardness	91.7 HRA
Grain Structure	Submicron
TRS	550,000psi

Cutting & Wear Resistance Impact & Toughness

- Heat-resistant steels
- Corrosion-resistant steels
- Stainless steels
- Non-ferrous metal alloys
- Titanium

HB-115

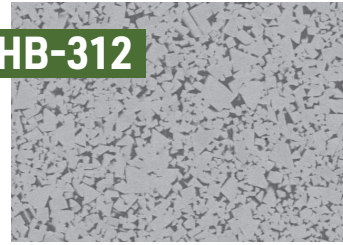


Co	15%
WC	85%
Density	14.0 g/cm ³
Hardness	90 HRA
Grain Structure	Submicron
TRS	610,000 psi

Cutting & Wear Resistance Impact & Toughness

- Diverse wear applications
- Shock-resistance applications
- Impact punches
- Punches and ejector pins
- Roughing, shearing applications

HB-312



Co	12%
WC	88%
Density	14.33 g/cm ³
Hardness	88.7 HRA
Grain Structure	Coarse
TRS	490,000 psi

Cutting & Wear Resistance Impact & Toughness

- Low impact/light shock resistance
- Capability for wide variety of forming applications
- Ammunition dies
- Light stamping

HB-315

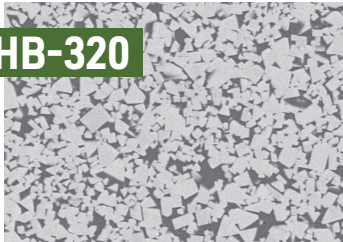


Co	(8.4 pt)
WC	88%
Density	14.33 g/cm ³
Hardness	88.7 HRA
Grain Structure	Coarse
TRS	490,000 psi

Cutting & Wear Resistance Impact & Toughness

- Steels, SS, non-ferrous varieties forming applications
- Light stamping carbide die and nib deep draw
- Fine blanking stamping dies
- Ammunition dies

HB-320



Co	20%
WC	80%
Density	13.56 g/cm ³
Hardness	85.4 HRA
Grain Structure	Coarse
TRS	455,000 psi

Cutting & Wear Resistance Impact & Toughness

- Med-/High-impact forming applications
- Header dies, draw dies, stamping die details
- Fastener forming dies
- Ammunition dies

HB-325

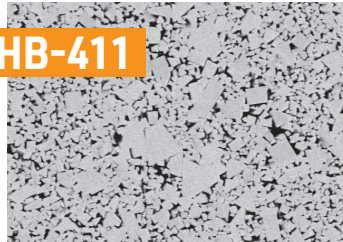


Co	25%
WC	75%
Density	13.18 g/cm ³
Hardness	83.3 HRA
Grain Structure	Coarse
TRS	430,000 psi

Cutting & Wear Resistance Impact & Toughness

- High Impact forming applications
- Header dies, draw dies, stamping die details
- Thread rolling
- Ammunition dies

HB-411



Co	11.5%
WC	88.5%
Density	14.39 g/cm ³
Hardness	90 HRA
Grain Structure	Bimodal
TRS	530,000psi

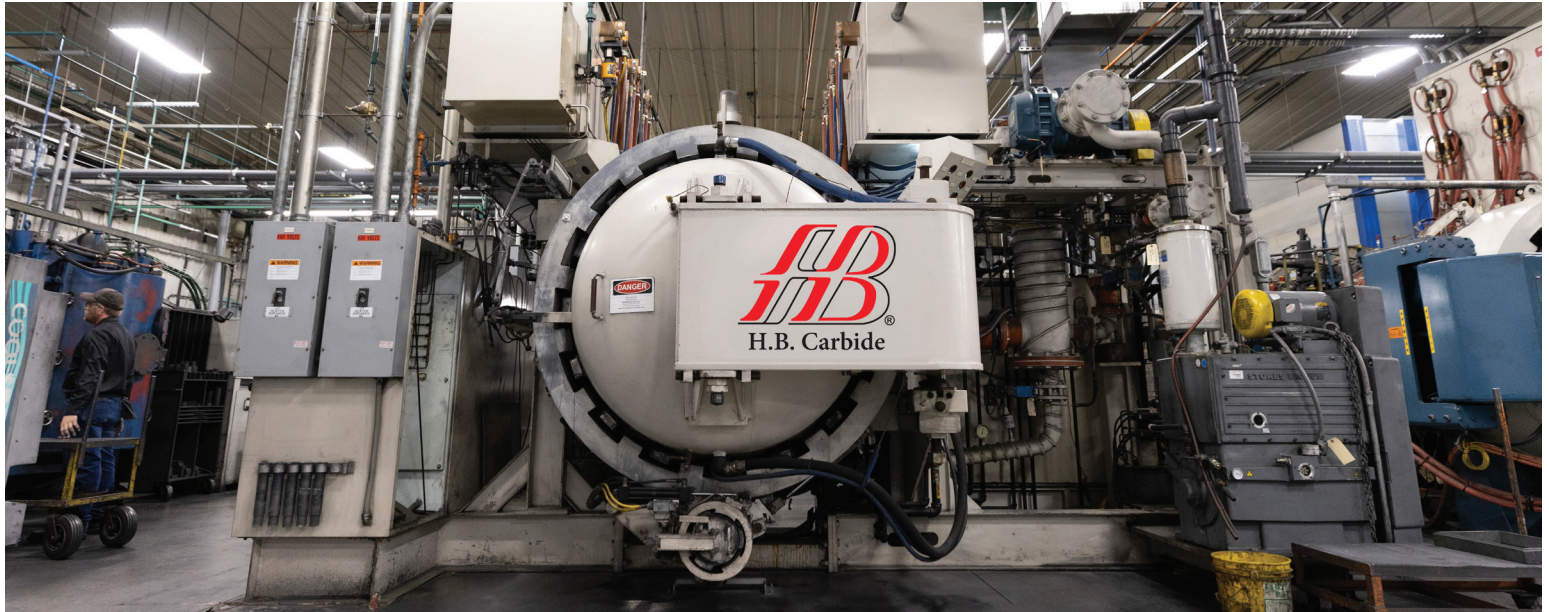
Cutting & Wear Resistance Impact & Toughness

- Exceptional performance in punch applications
- Heat-resistant steels
- Stainless steels
- Non-ferrous metal alloys



Download a copy of
our Grade Selection
Chart

VERTICAL INTEGRATION – BETTER QUALITY CONTROL AND DELIVERY TIMES



H.B. Carbide is a vertically integrated company that handles every facet of carbide production starting from highest quality raw materials – procured from long-established, reliable suppliers – to the production of the final finished ground blanks. We keep a sharp eye on quality throughout the process while meeting aggressive delivery times.



POWDER PRODUCTION

Tungsten carbide powder, cobalt and carbon are milled to create a homogenous material mix.



POWDER APPROVAL

The carbide blend is evaluated for powder characteristics and hardness in our Test & Inspection Lab to ensure it meets the standards of each particular grade.



ISO-PRESSING

Used for the majority of the forms we produce, this approach is for diameters of 1" and larger. Powder is loaded into cans with rubber boots, sealed and then placed in an iso-static press using water pressure to push the powder together. The iso-press compacted bar is processed through a vacuum pre-sinter furnace cycle to semi-harden the material and allow it to be handled.



EXTRUSION

This approach is used to produce more near-net shapes from 0.050" – .75". It relies on a carbide powder binder system to create a pliable material, which is loaded into a press and pushed through a die to create various shapes that are then dried and pre-sintered.



PREFORMING

Blanks and preforms outer diameters are completed on both CNC and manual machines. Coolant holes and flutes are completed on CNC machines.



SINTER-HIPPING

The blanks and preforms are placed in a furnace that combines vacuum sintering and hot isostatic pressing to stabilize and densify the material. During this process, the forms shrink about 20% in size.



VALUE ADD SERVICES

For customers who need it, we can add centerless and between center grinding to the process.



FINAL INSPECTION

After sintering, forms and blanks run through non-destructive tests to determine indirect grain distribution assessment, cobalt content, density and powder flow ability, as well as destructive tests that evaluate micro-porosity and hardness. Plus, there is dimensional inspection of every component.

DISCOVER WHAT THE
H.B. CARBIDE ADVANTAGE
CAN DO FOR YOU

- **Responsible corporate citizen** - social, cultural and environmental responsibilities
- **Reliable partner** for global supply & support
- **Sustainability** - Environmentally focused, including recycling of carbide scraps
- **Focus on customer experience** - Service Supply & Technical Support
- **Material innovation** - Optimized application specific grade selection
- **Advanced production controls** and techniques ensuring quality and consistency



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